



# Total Containment, Inc.

Marinaflex® Piping Systems

California Water Resources Board

June 2002





# Product Overview

Marinaflex Advantages  
Design Considerations



# Product Overview

- Complete System Approach
- Secondarily Contained Jointless Piping
- Easily & Rapidly Installed





# Marinaflex Advantages

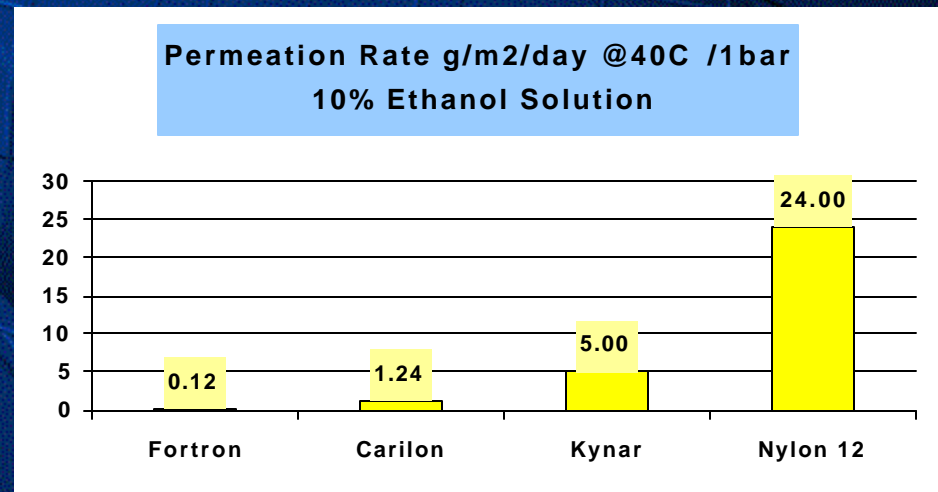


- Low Permeation Rates for Fuels and Their Additives
- Gasketless Coupling Connection
- Flexibility & Kink Resistance
- Impact Shock Resistance



# Marinaflex - Fortron Barrier vs. Market Alternatives

- Tested with MTBE & Future Fuels
- Compatible with BioDiesel, Alcohols, Esters, Aldehydes, Furans & Ketone Additives





# Couplings

Metal to Metal Seal  
No Gaskets to Replace  
Brass to withstand  
Fresh & Salt Water  
Environments





# Marinaflex Kink Resistance

- Constantly Moving
- Kinks Permanently Damage Pipe Systems



- Corrugations Absorb Shock
- No Need for Flex Connectors
- Reduces Shock of Joins

	TOTAL CONTAINMENT	OTHER PIPING MANUFACTURERS				
		ONE	TWO	THREE	FOUR	FIVE
<b>Barrier Material</b>	Carilon® + 3 layers	Kynar™ + 7 layers	Aluminum + 7 layers	Kynar™ + 3 layers	Kynar™ + 4 layers	Selar® + 1 layer
<b>Burst Pressure</b>  Operating is 50 psi	760	680	900	730	700	710
<b>Force (lbs) due to 70° Temperature Change</b>  Stress levels seen by attached components (lower is better)	150	340	370	210	350	605
<b>Coupling Seal Type</b>  Seal life and compatibility	Cone Seat with copper washer	Rubber Gasket	NPT Thread	Rubber Gasket	NPT Thread	NPT Thread



# Design Considerations



- Location of Piping on Docks
  - Away from boat or other impact
  - Steel Jacketing Option
- Tidal Changes
  - Suitable lengths from Dock to Shore
  - Piping is not a tether for the Dock
- Containment Sumps at all joints
  - Under Dispensers
  - Transitions
  - Tanks



# Marinaflex



- Fast, Easy to Install and Reliable Marine Fuel Delivery System
- Compatible with the Future of Fuels
- Designed to Withstand Dynamics of Marinas